

Remarks/Arguments

This Amendment modifies the claims in this application by canceling Claim 27, adding new Claim 29, and amending Claims 23 and 28. Four claims are pending in the application: Claims 23, 24, 28, and 29. Claim 29 is independent; Claims 23, 24, and 28, dependent.

Drawings

The Office Action objects to the drawings under 37 CFR 1.83(a) and requires (in paragraph 2) corrected drawings in the applicant's reply to the Office Action to avoid abandonment of the application. It is pointed out that the applicant has not submitted corrected drawings. The applicant believes the objection is overcome by addition of the new independent Claim 29 and the cancellation of independent Claim 27 together with the explanation below. Consequently, the applicant respectfully requests the requirement for corrected drawings be withdrawn.

Claim Rejection under 35 USC § 112

The Office Action rejects all of the claim under 35 USC § 112, first paragraph, as failing to comply with written description requirement. But the applicant believes the addition of new independent Claim 29 and the cancellation of independent Claim 27 together with the explanation below overcomes this rejection under 35 USC § 112. The applicant contends all of the elements of the claims now pending in the application are sufficiently disclosed in the application on its filing date, March 26, 2001. This contention includes the radial resonator element of the claims, which seems to be at the center of the rejection.

The radial resonator, which is a type of cavity resonator, was known in the art before the filing date of the application. And it is submitted that those skilled in the art would recognize the apparatus of Figure 2 to include a radial resonator – even though the words “radial resonator” do not appear in the specification.

For example, Figure 1 in the article by Ismo V. Lindell titled “Slope Parameter and Q of Radial Resonators”, dated in 1965, (Attached) shows a schematic of a radial resonator. As can be seen, the radial resonator shown in Lindell's Figure 1 is configured like a disk and has a central passageway extending axially there through.

Figure 2 of the application shows a radial resonator (a side elevation view in cross section) that is configured like a hollow disk having a central passageway that extends axially

there through. Walls of the resonator (e.g., 43, 43', and 45) form a cavity 42. Like Figure 1 of Lindell, the axial resonator of Figure 2 in the application has central passageway 20' that extends axially through the resonator. Also, the application, at page 4, lines 17-20, refers to U.S. Patent 4,656,504, which is incorporated by reference in the application. Figure 2 of U.S. Patent 4,656,504 shows an axially transverse elevation view in cross-section of a radial resonator like the one shown in Figure 2 of the application. This Figure clearly shows a resonator with a cavity C like the cavity 42 and with an axially extending passageway P that is like the axially extending passageway 20'. Further, Figure 2 of the patent clearly shows a discharge tube D axially extending through the central passageway P like the discharge tube 10 axially extending through the central passageway 20'.

As explained in the application, a source 30 generates airflow 31 (acting as a coolant) in the central passageway 20' through entry aperture 21 and passageway 20. The airflow 31 comes in contact with the exterior surface of the discharge tube 10, thereby cooling the tube 10.

The radial resonator has dimensions to allow resonant oscillation of electromagnetic waves. This is what happens when electromagnetic waves, such as microwave or radio frequency energy is introduced into the cavity 42 via probe 46 through the outer wall 44. The radial resonator of Figure 2 in the application concentrates energy at the center – in the passageway 20'. Consequently, when energized, the radial resonator of Figure 2 subjects the discharge tube 10 with sufficient amounts of radio frequency or microwave energy to generate plasma from the gas in the discharge tube 10. But the radio frequency or microwave energy does not effect the cooling air because air is transparent to electromagnetic energy.

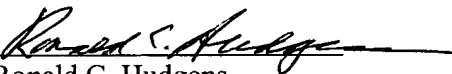
Serial Number: 09/817,669
Docket Number: 10003916-1

In view of the foregoing, it is believed that this Amendment overcomes the objection to the drawings under 37 CFR 1.83(a) and the rejection of all of the claims under 35 USC § 112, first paragraph, as failing to comply with written description requirement. As explained above, all elements of the claims now pending in the application are sufficiently disclosed in the application, including the drawings, as of its filing date, March 26, 2001.

The applicant respectfully requests the Examiner's reconsideration and favorable action. If there are any questions or unresolved issues remaining in the application after this Amendment, please contact the undersigned attorney at the telephone number given below.

Respectfully submitted,
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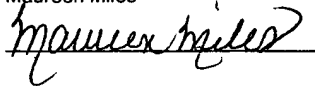
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Amendments to the Drawings:

No amendments to the Drawings are requested herein.